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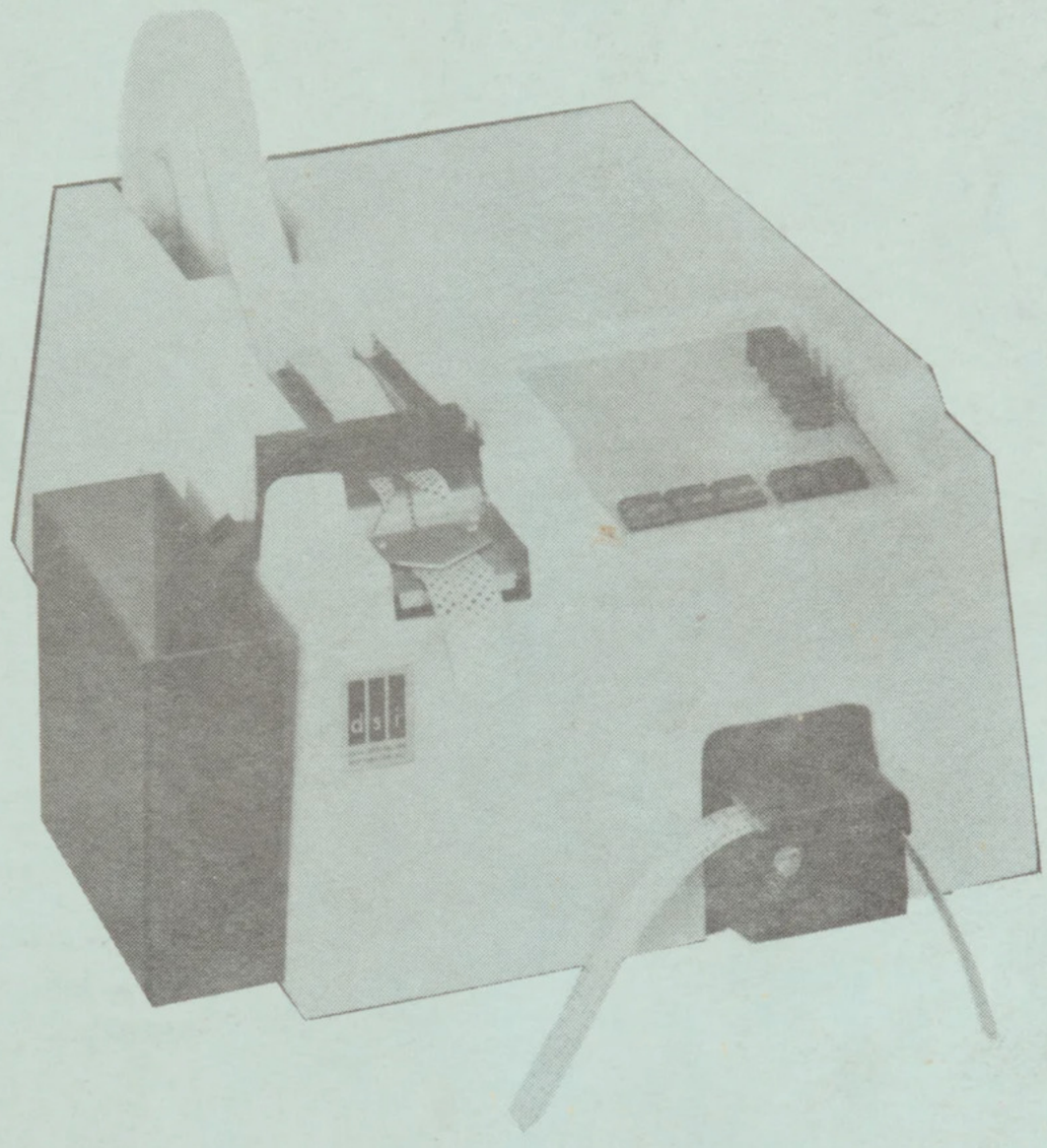

# LRP-300

# INSTALLATION AND OPERATING MANUAL

dsi

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# LRP-300

# INSTALLATION AND OPERATING MANUAL


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# 1. GENERAL NOTES

## 1.1 SCOPE

This manual is a guide to the simple procedures required to install and operate the LRP-300 product series. It applies to the following models:

| | |
|---|---|
| LRP-300: | Basic unit, punch/reader combination |
| LP-300 : | Punch unit only |
| | |
| Option J: | 100 VAC, 50/60Hz |
| Option K: | 1200 Baud Reader |
| Option L: | 6 Level Advanced Feedhole Tape |
| Option T: | Current Loop Interface |
| Option V: | 230 VAC, 50 Hz |

For re-programming and maintenance information request DSI SPEC. 3306 - LRP-300 MAINTENANCE MANUAL and DSI SPEC. 3103 - MODUPERF MAINTENANCE MANUAL.

## 1.2 GENERAL DESCRIPTION

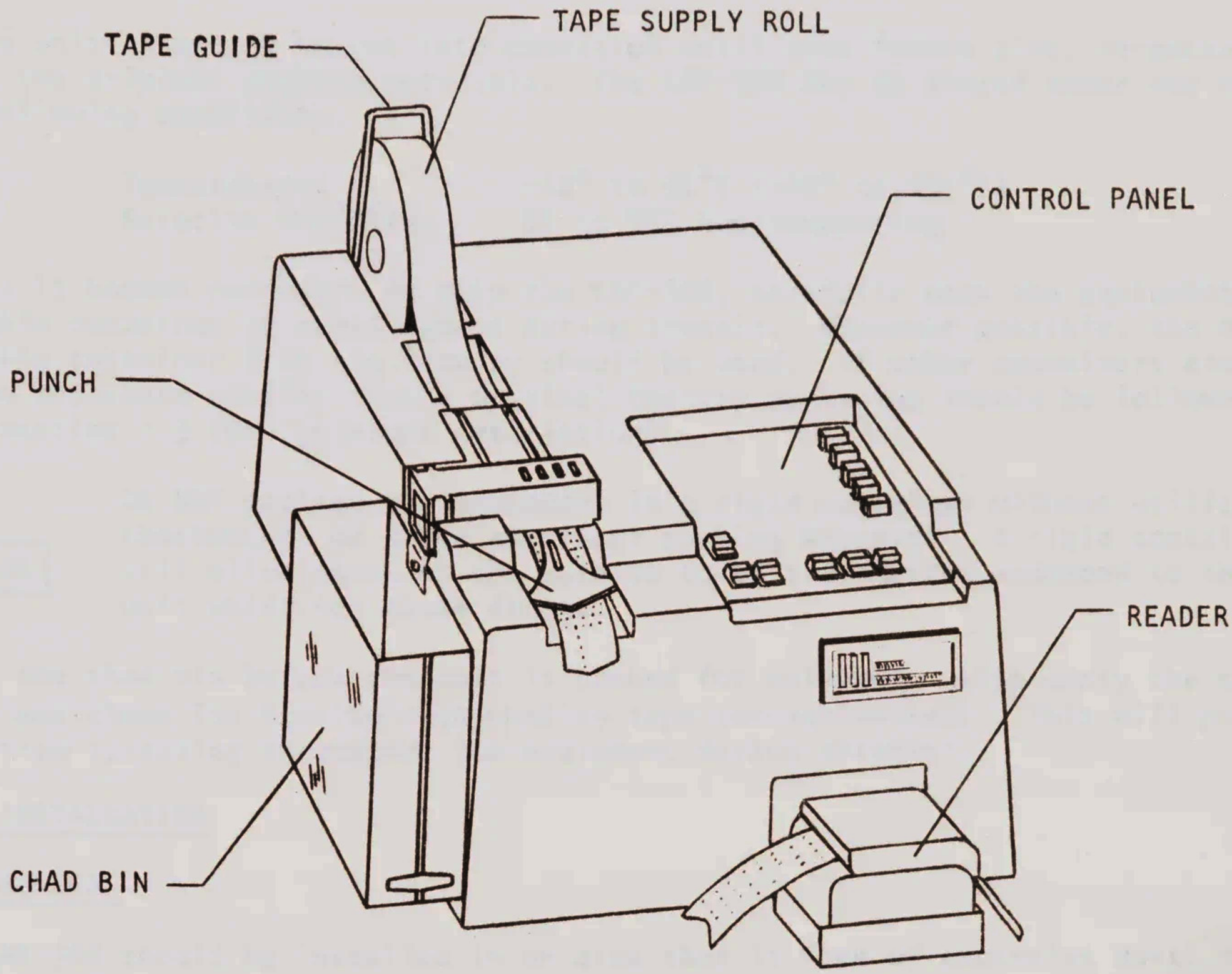
The LRP-300 Reader Punch Combo is a self-contained table top unit that has been designed to provide paper tape I/O capabilities for teleprinter and CRT terminals. The device has a RS 232C/CCITT V.24 interface and can transmit and receive at two switch selectable speeds of typically 110 baud (11 bit) and 300 baud (10 bit) ASCII code.

The Combo may be used off-line to prepare, edit and duplicate tapes. The search/edit/skip control may be used to single step the reader or alternately, continuous step until the button is released or carriage return is detected. Controls such as punch back-space, remote control and print offer operator flexibility and convenience when editing tapes. On-line the unit may be operated as a stand alone tape terminal or in conjunction with other terminals in either full or half-duplex modes (Switch selectable). The unit also detects the control codes DC1-DC4, thereby allowing complete control of the punch and reader from the tape, keyboard or remote terminal.

In addition, the LRP-300 is programmable for 5 Channel Baudot tapes, Echoplex instead of Full Duplex, 45 to 300 Baud, and 7 to 11 unit code.

The LRP-300 is packaged in an attractively styled cabinet which consumes only 13 inches of table width. Operator controls are conveniently located, punched tape exits toward the operator and the front mounted reader transports tape from left to right. For ease of service, the unit consists of five modules; punch, reader, power supply, control panel, and logic/driver board. Loosening 3 screws allows easy removal of the cover and excellent accessibility to all five modules.

Tape is perforated with the revolutionary "MODUPERF" mechanism which features whisper quiet operation and a modular design that allows the die block and/or data selector to be replaced in less than a minute.




LRP-300 FIGURE 1-1

## 1.3 UNPACKING

When removing the unit from its shipping container, observe all instructions and cautions which might appear on the outside of the carton. Also, be careful not to lift or handle the cabinet by fragile parts which could be damaged.

The units have been carefully tested, inspected, and packed to insure arrival in good condition. Each is enclosed in a protective, dust-proof plastic bag, and surrounded by shock absorbing expanded urethane foam. All packing material, including the carton itself, should be saved, in the event the unit must be returned or forwarded.

Inspect the unit immediately after removal from the packing container to determine if any damage has occurred in transit. Special attention should be given to the tape reader and the plastic cover. If any damage is evident, report it immediately to the transporting company.

## 1.4 STORING AND SHIPPING

If the unit is not to be put into operation until some future time, re-package it using the original packing materials. The LRP-300 may be stored under any of the following conditions:

| | |
|---|---|
| Temperature: | -40° to 66°C (-40° to 151°F) |
| Relative Humidity: | 5% to 95% Non-condensing |

Should it become necessary to ship the LRP-300, carefully pack the equipment in a suitable container to avoid damage during transit. Whenever possible, the original shipping container from the factory should be used. If other containers are utilized, a procedure similar to the original factory packaging should be followed. (See section 1.3 for container description).

CAUTION

DO NOT package the equipment in a rigid container without utilizing shockmounts or shock absorbant packing material. A rigid container will allow shock on the outside to be transmitted undamped to the unit which may cause damage.

Empty the chad bin before the unit is packed for shipment. Also empty the chad chute and close its opening with masking tape (or equivalent). This will prevent chad from spreading throughout the equipment during shipment.

# 2. INSTALLATION

## 2.1 GENERAL

The LRP-300 should be installed in an area that is free of excessive dust, dirt, corrosive fumes, and vapors. To insure that the unit has proper ventilation and cooling, the ventilation openings on the bottom and the left side of the cabinet should not be obstructed. It is NOT recommended that any padding or cushioning material be placed under the unit, as this could restrict the air flow. The unit may be installed on any solid, level surface of sufficient size to accommodate the physical dimensions of the unit. The area or enclosure in which the LRP-300 will operate has to meet the following environmental conditions:

| | |
|---|---|
| Temperature: | 5° to 40°C (41° to 104°F) |
| Relative Humidity: | 5% to 95% Non-condensing |

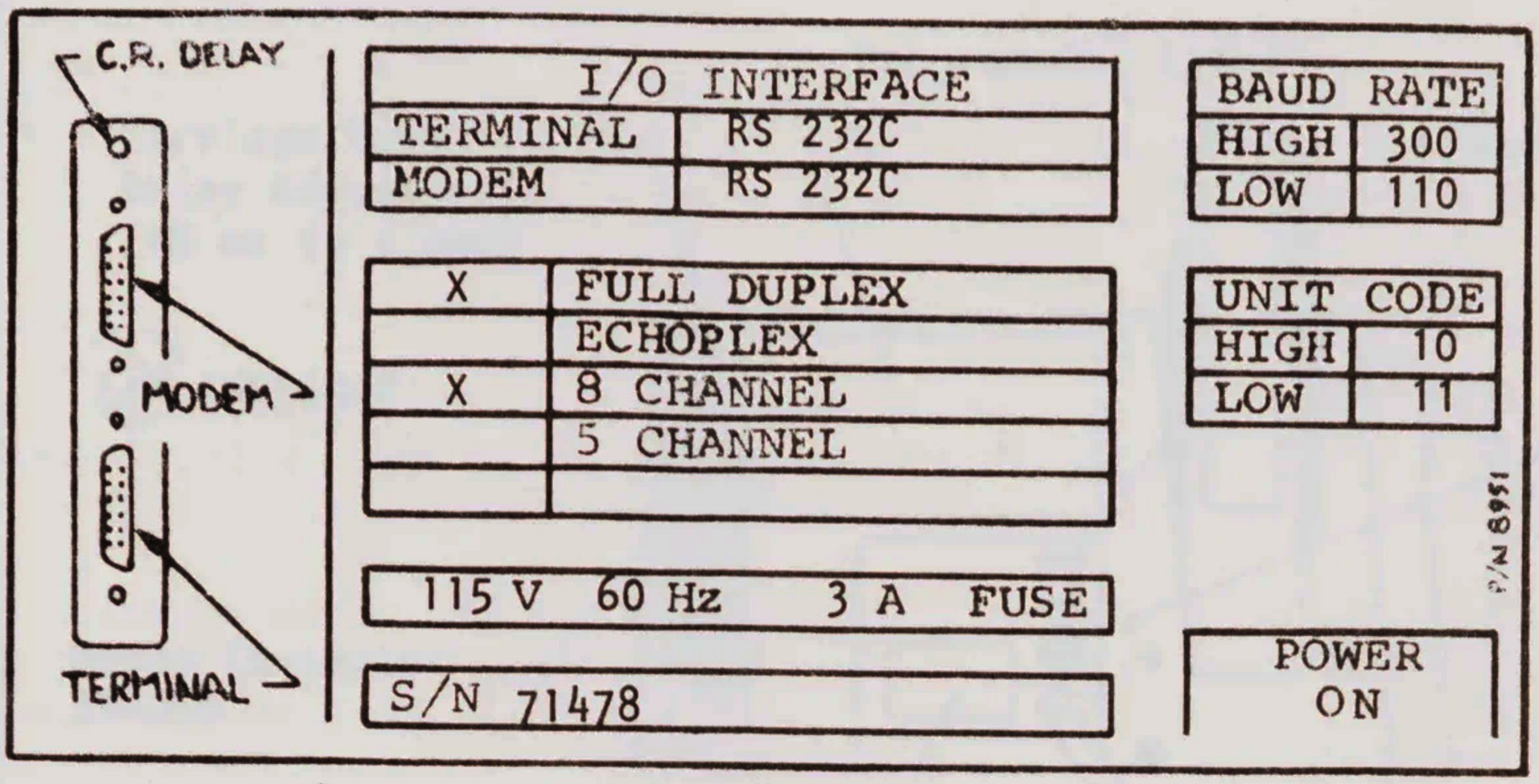
## 2.2 MODEL IDENTIFICATION

The model number is listed on the serial number plate which is attached to the rear side of the unit. There are two main groups of products, the LRP-300 (Reader/Punch) and the LP-300 (Punch only). Suffix letters denote the options.

A LRP-300VT, for example, is a 230V/50HZ Punch/Reader Combo with current loop interface. See section 1.1 for overview of available options.

In addition to that, each unit may be programmed to 8/5 channels, different baud rates, Full/Echoplex etc. The programmed setting is marked on a label attached to the rear side of each unit. For example, Figure 2-1 illustrates the program setting of a standard LRP-300.

Programming instructions are beyond the scope of this manual, they are part of the LRP-300 MAINTENANCE MANUAL (DSI SPEC. 3306).




PROGRAMMING LABEL

FIGURE 2-1

## 2.3 POWER INTERFACE

Before making any power line connection, place the power switch (shown in fig. 2-2) in the "OFF" position. The AC power cord extends from the rear of the cabinet and is terminated in a three-prong male, US type plug for connection to a grounded AC power receptacle.

**CAUTION** Make sure the available AC power matches the voltage and frequency requirements of the unit.

These requirements and the proper fuse values are shown on a label on the rear of the cabinet. The specified voltage should be met within ±10%, the frequency within ±2 HZ.

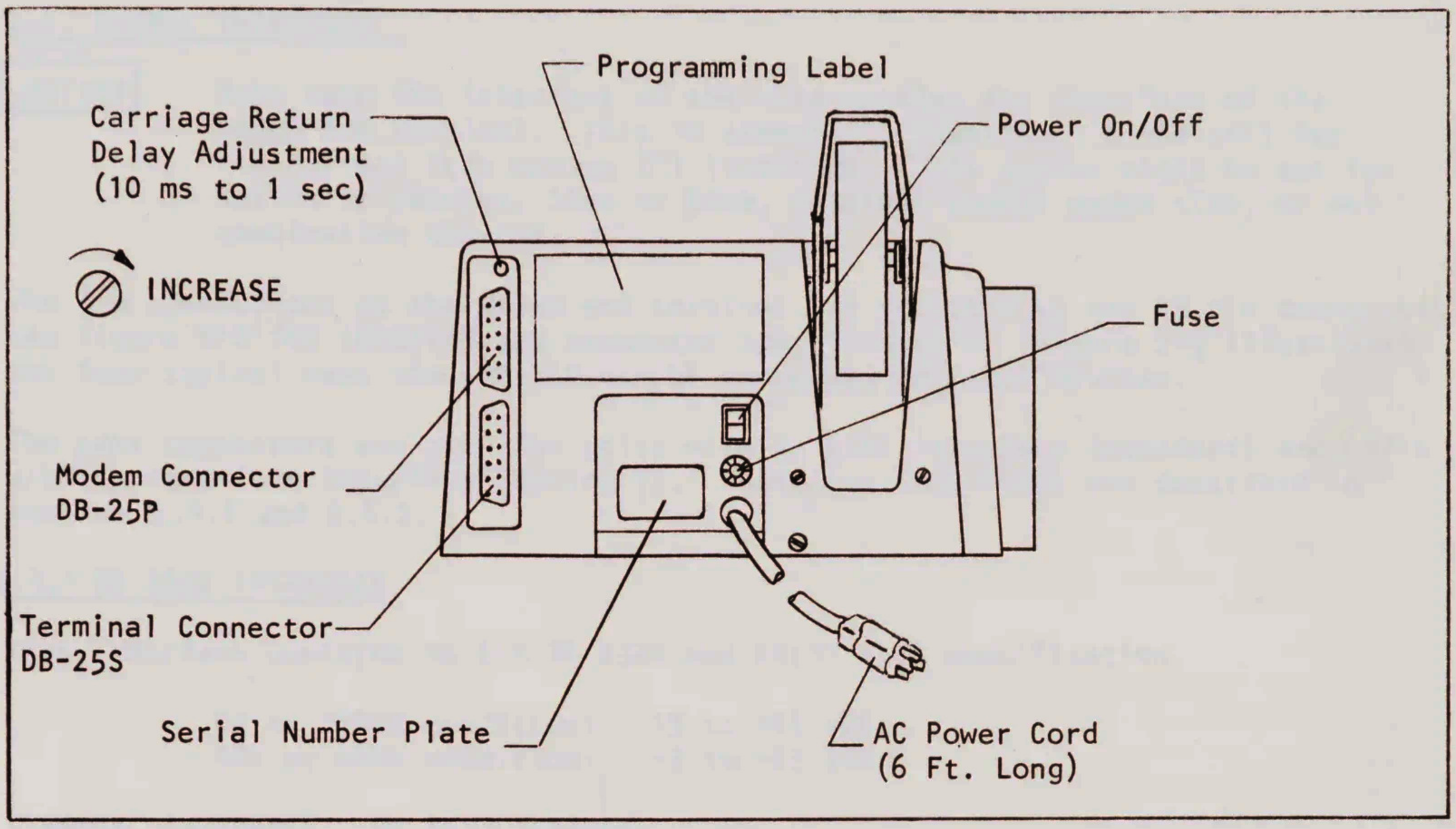
**NOTE** Units with option V (230V, 50HZ) are programmable for 215 Volt +10% -8% (198V minimum) for low voltage areas. See LRP-300 Maintenance Manual (Spec. 3306) for instructions.

**NOTE** Units with Option J (100V, 50/60Hz) are set up either for 50 or 60 Hz. To change from 60Hz to 50Hz, a different pulley (stored in unit) has to be mounted on the drive motor shaft. See LRP-300 MAINTENANCE MANUAL (DSI SPEC. 3306) for instructions.

**NOTE** All units, US and overseas market, are supplied with the same international color coded power cord:

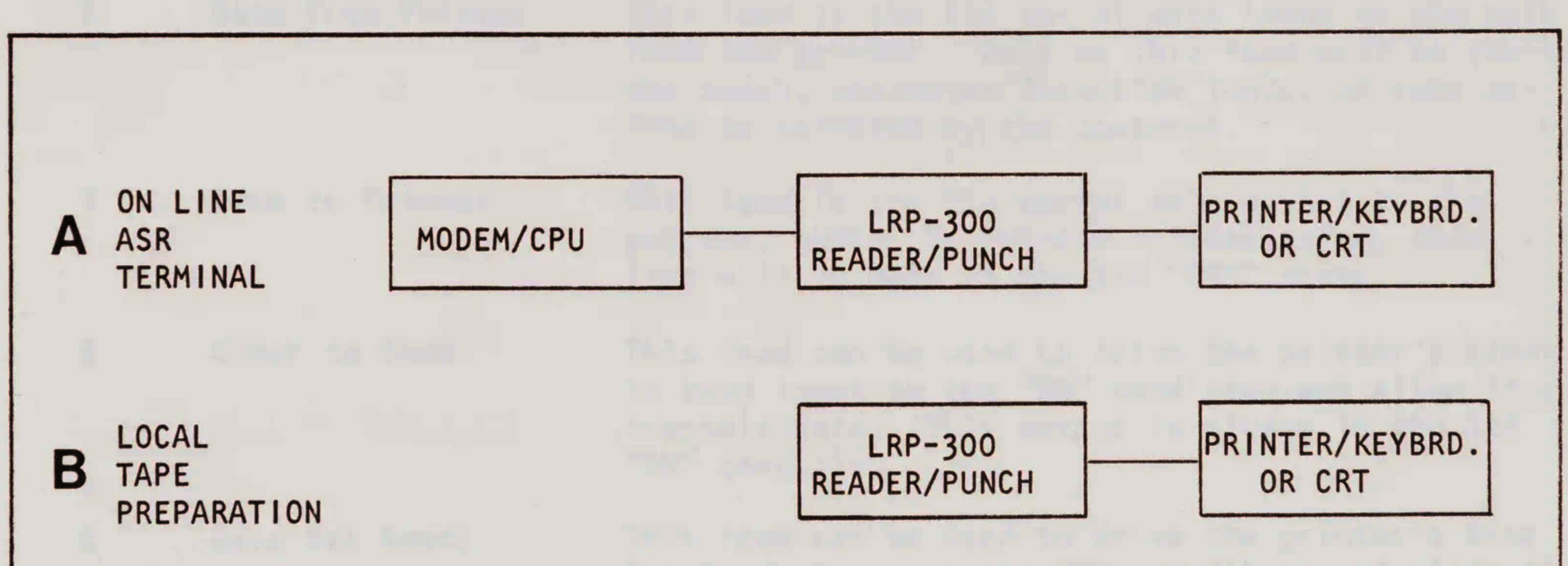
| | |
|---|---|
| BROWN | - HOT |
| BLUE | - NEUTRAL |
| GREEN w/YELLOW | - FRAME GROUND |

If a different plug is required, cut off the US type plug and replace it with a locally obtainable plug.




LRP-300 Rear View

Figure 2-2




TYPICAL INSTALLATIONS

Figure 2-3

## 2.4 SIGNAL INTERFACE

**CAUTION** Make sure the interface of the unit matches the interface of the modem and terminal. This is especially important if the unit has the current loop option (T) installed. This option might be set for active or passive, 20ma or 60ma, terminal and/or modem side, or any combination thereof.

The I/O connections to the modem and terminal are provided by two 25 pin connectors. See figure 2-2 for location and connector specifications. Figure 2-3 illustrates the four typical ways the LRP-300 can be connected to other devices.

The same connectors are used for units with RS 232C interface (standard) and units with current loop interface (Option T). These two interfaces are described in section 2.4.1 and 2.4.2.

### 2.4.1 RS 232C INTERFACE

This Interface conforms to EIA RS 232C and CCITT V.24 specification.

ON or SPACE condition: +3 to +25 VDC
OFF or MARK condition: -3 to -25 VDC

TERMINAL INTERFACE: DB 25S Connector

| PIN NO. | SIGNAL | DEFINITION |
|---|---|---|
| 2 | Data From Printer | This lead is the EIA serial data input to the unit from the printer. Data on this lead will be fed to the punch, character detection logic, or sent on-line as selected by the controls. |
| 3 | Data to Printer | This lead is the EIA serial data output to the printer. When the Printer is deselected, this lead will be held in the EIA "OFF" state. |
| 5 | Clear to Send | This lead can be used to drive the printer's clear to send input to the "ON" condition and allow it to transmit data. This output is always in the EIA "ON" condition. |
| 6 | Data Set Ready | This lead can be used to drive the printer's Data Set Ready input to the "ON" condition and allow it to communicate. This output is always in the EIA "ON" condition. |
| 7 | DC Ground | This lead serves as the voltage reference between the interfaced devices (0 Volts). |
| 8 | Carrier Detect | This lead can be used to drive the printer's carrier detect lead to the "ON" condition and allow the printer to receive data. This lead is always in the EIA "ON" condition. |
| 1, 4, 9-25 | | Unterminated |

MODEM INTERFACE: DB 25P Connector

| PIN NO. | SIGNAL | DEFINITION |
|---|---|---|
| 2 | Transmitted Data | This is the EIA serial data output of the unit. When the LRP-300 is in the LOCAL mode, this lead is held in the EIA "OFF" state. |
| 3 | Received Data | This lead is the EIA serial data input to the LRP-300 from the modem. When the LRP-300 is in the LOCAL mode, this input is ignored. |
| 4 | Request to Send | This lead is an output of the LRP-300. It is in the "ON" state when the unit is in the LINE mode and the reader switch is ON. RTS is in the "OFF" state when the unit is in LOCAL mode and/or the reader switch is OFF. |
| 5 | Clear to Send | This input lead can be used to control the LRP-300 reader. When this lead is left unwired or driven to the "OFF" state, the reader will be inhibited from sending. When this lead is driven to the EIA "ON" state, the reader will be enabled. |
| 7 | DC Ground | This lead serves as the voltage reference between the interfaced devices (0 Volts). |
| 20 | Data Terminal Ready | This output lead indicates whether the LRP-300 is in the LINE or LOCAL mode. When the unit is in the LOCAL mode and will not communicate on the modem port, the Data Terminal Ready lead is held at EIA "OFF". When the unit is in the LINE mode, this lead is in the EIA "ON" state. |
| 1, 6, 8-19, 21-25 | | Unterminated |

## 2.4.2 CURRENT LOOP INTERFACE

Current loop signal definition: Current - Mark - Hole
No Current - Space - No Hole

TERMINAL INTERFACE: DB 25S Connector

| PIN NO. | SIGNAL | DEFINITION |
|---|---|---|
| 12 | + Transmit | This lead is the Current Loop serial data positive terminal for data output to the printer. When the Printer is deselected there will be current flow (mark) to the printer. |
| 13 | - Transmit | This lead is the negative terminal connection for completion of the transmit current loop. |

| PIN NO. | SIGNAL | DEFINITION |
|---|---|---|
| 24 | + Receive | This lead is the Current Loop serial data positive terminal for data input from the printer. Data on this lead will be fed to the punch character detection logic or sent on-line as selected by the controls. When the print switch is off, data from the terminal will not be allowed into the unit. |
| 25 | - Receive | This lead is the negative terminal connection for completion of the receive current loop. |
| 1, 4, 9-11, 14-23 | | Unterminated |
| 2, 3, 5-8 | | Do not connect |

MODEM INTERFACE: DB 25P Connector

| PIN NO. | SIGNAL | DEFINITION |
|---|---|---|
| 12 | + Transmit | This lead is the Current Loop serial data positive terminal for data output to the modem. When the LOCAL mode is selected, there will be current flow (mark) to the modem. |
| 13 | - Transmit | This lead is the negative terminal connection of the transmit current loop. |
| 24 | + Receive | This lead is the Current Loop serial data positive terminal for data input from the Modem. Data on this lead (when enabled by LINE mode switch) will be fed to the terminal, punch or character detection logic as selected by the controls. |
| 25 | - Receive | This lead is the negative terminal connection for completion of the receive current loop. |
| 1, 6, 8-11, 14-19, 21-23 | | Unterminated |
| 2, 3, 7, 20 | | Do not connect |
| 4, 5 | | Connect pin 4 to pin 5 (Jumper required) |

## 2.5 SETTING OF CARRIAGE RETURN DELAY

This section is only applicable if the LRP-300 is connected to a printer without data buffer and which needs more than one character cycle for carriage return. Disregard this section if the utilized printer has a data buffer (DECWRITER or MODEL 43 TELETYPE for example).

Normally, printers without data buffers require fill characters located after carriage return in the punched tape. While these fill characters are read, the printer has time to go through its carriage return cycle. The LRP-300 has an automatic carriage return delay feature. When the reader detects a carriage return character, the

reading of the following character is delayed by an adjustable interval of 10 ms to 1 second. This feature eliminates the need for fill characters.

To adjust, turn the delay potentiometer (see fig. 2-2) all the way clockwise, its 1 second position (factory setting: 10 ms.). Then transmit a message from the reader to the printer which uses the full length of the print lines (max. carriage return time). Now, as the message is being printed, line by line, observe the hesitation of the print head carriage just after it completes a carriage return. Slowly turn the delay potentiometer counter clockwise until the hesitation is reduced to a just noticeable amount. The LRP-300 is now adjusted to yield maximum thruput with this particular printer.

## 2.6 DETAILED OPTION DESCRIPTION

### 2.6.1 OPTION J - 100 VOLT, 50/60 Hz

100 Volt, 50/60Hz in lieu of 115V/60Hz. For 100V ± 10%, 50 ± 2Hz or 60 ± 2Hz power input. This option is factory installable only and is shipped in the standard setting of 100 Volts and 60 Hz. To change to 50 Hz a different pulley (which is stored in the unit) has to be mounted on the drive motor shaft. See LRP 300 MAINTENANCE MANUAL (DSI SPEC 3306) for instructions.

### 2.6.2 OPTION K - 1200 BAUD READER

This factory installable option allows the user to prepare tapes in conjunction with a 300 baud printing terminal and then transmit the data out at 1200 baud to a local CPU or remote time share computer. Tape preparation may also be enhanced by interfacing the unit to a CRT and transmitting to the CRT at 1200 baud but receiving on the 300 baud punch after information has been edited on the tube.

This enhanced LRP-300 operates as follows. When the baud rate switch is in the low position, both the reader and punch operate at 300 baud and the system is responsive to all the remote control signals. When the unit is set for high, the punch will not respond to any data sent to the combo however, the reader will start when the unit detects a 1200 baud DC-1 and stop when it receives a 1200 baud DC-3 from the modem port, terminal port or read from the tape. In addition the reader will transmit through the modem and terminal ports if selected.

### 2.6.3 OPTION L - 6 LEVEL AF TAPE

This is a factory installable option. The unit is supplied with a 6 level advanced feed hole die block in lieu of the standard 8 level die block on the punch. The tape reader guiding is also changed to 6 level. The standard factory setting for this option is 8 unit code at 80/240 baud.

### 2.6.4 OPTION T - CURRENT LOOP

This field installable option provides current loop interface in lieu of RS232 on terminal and modem port. It can be set (strapped) for 20mA, 60mA, active or passive. The standard setting when shipped is:

20mA Active - Terminal Port
20mA Passive - Modem Port

For detailed interface information, see section 2.4.2.

## 2.6.5 OPTION V - 230 VOLT, 50 Hz

230V/50Hz in lieu of 115V/60Hz. For 230V + 10% - 14% (198V minimum) 50Hz ± 2 Hz power input. Requires different motor pulley, fuse and power supply strapping. This option is factory not field installable. Power supply will be shipped strapped for 230V ± 10% but can be strapped in field for 215V + 10% - 8% (198V minimum). See LRP 300 MAINTENANCE MANUAL (DSI SPEC. 3306) for instructions.

## 2.7 ACCESSORIES

The following accessories are available for use with the LRP-300:

**EXTENSION CABLE** - DSI Part No. 8978. This is a 6 ft. (1.8m) long cable with a DB 25S connector on one end and a DB 25P connector on the other end.

**FOLDED TAPE SUPPLY KIT** - DSI Part No. 8953. Easily field installable part allows the use of folded tape supply packs. Instructions are enclosed with kit.

**CURRENT LOOP KIT** - DSI Part No. 8942. This is a field installable current loop circuit board. It is preset at the factory to 20 ma active - Terminal port, 20 ma passive - Modem port. Installation and re-programming instructions are enclosed with the kit.

**CASE OF TAPE** - 28 rolls of 1000 ft. x 1 inch unoiled grey paper tape (DSI P/N8783)

**LRP-300 STARTER KIT** - DSI Part No. 8979. It contains the following items:

| | |
|---|---|
| 1 Folded Tape Pack, Grey | DSI/Part No. 7634 |
| 3 Rolls of Grey Paper Tape (1" wide) | P/N 8783 |
| 1 Folded Tape Supply Kit | P/N 8953 |
| 1 Die Block Cleaner | P/N 7734 |
| 1 Feedhole Spacing Kit | P/N 8771 |
| 2 Fuses, 3A | P/N 6241 |
| 2 Fuses, 1.5A | P/N 8608 |
| 1 Extension Cable | P/N 8978 |

**POWER WINDER** - DSI Model TM 230. This is a floor mounted power take up winder which may be used to roll up long tapes from punch or reader.

**TAPE GUIDE KIT** - If unit is used with different width tapes, this is the guide wire which supports the tape on the supply roll.
For 8 and 6 level tape: P/N 9465
For 5 level tape: P/N 9466

**FUSES**
- 3Amperes (for 100, 115V), DSI P/N 6241
- 1.5 Amperes (for 215, 230V), DSI P/N 8608

# 3. OPERATING GUIDE

## 3.1 TAPE LOADING - ROLLS

The unit will accommodate tape rolls with a two inch core diameter and up to eight inches outside diameter. See section 4.1 for recommended tape materials.

Refer to figure 3-1 and label on unit when following this procedure:

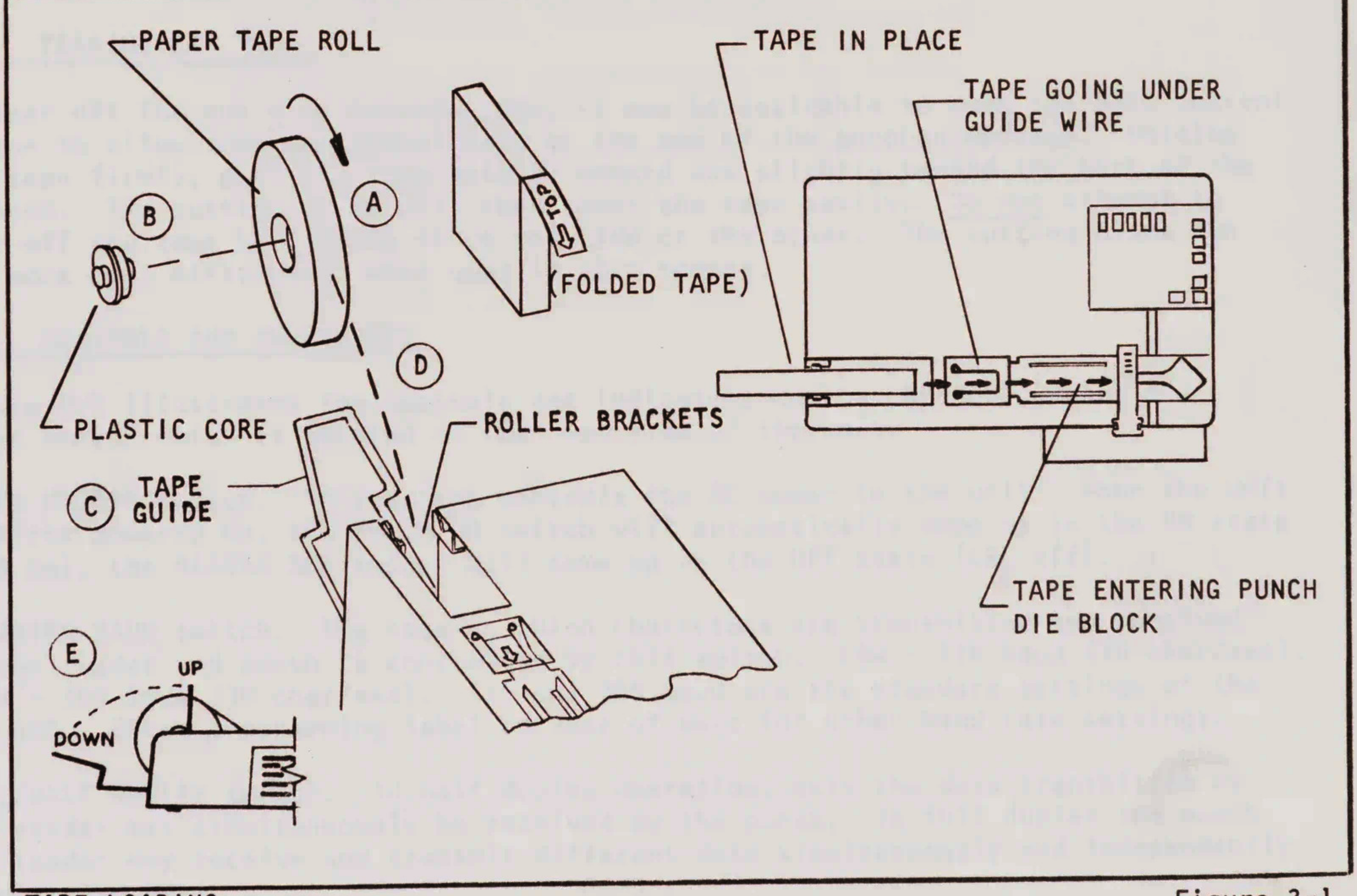
a. Check the roll of tape to be certain that it is flat and not distorted or "coned" in the center. If this distortion does exist, lay the roll on a flat surface and push downward to force the distorted areas back into place. Do not break the seal on the roll at this time.

b. Put the plastic core in to the roll.

c. To install the tape guide, put the ends of the tape guide into the pivot holes located below the roller brackets.

d. Pivot the tape guide down and place the roll of tape on the roller brackets.

e. Pivot the tape guide up over the roll of tape into the vertical position.




TAPE LOADING

Figure 3-1

f. Break the seal on the tape roll, tearing (or cutting) off the first layer of tape and making sure the segment of tape that was glued is removed. This will prevent undue difficulty in threading the tape through the punch block. When tearing off the leading edge of the tape, attempt to make the tear as even as possible, or scissors should be used to assure a clean cut. With MYLAR tape, scissors MUST be used.

g. Route the tape under the tape guide wire and through the slot in the die block as illustrated. The TOP and ⟹ on printed tape (when used) will show now on top.

h. Now, with the POWER switch in the ON position, with one hand push the tape further forward until the leading edge butts up against the feed sprocket; at the same time depress the FEED switch with the other hand. As you continue to push the tape forward, the feed sprocket will become engaged with the tape and pull it through the machine. Continue to depress the FEED switch until approximately 1 foot (30 cm) of tape hangs from the front of the unit. The unit is now ready for operation.

## 3.2 TAPE LOADING - FAN FOLD

With the Folded Tape Supply Kit (DSI Part No. 8953) installed, the LRP-300 accommodates standard fan fold packs. Insert pack as illustrated in figure 3-1. Be sure that the tape exits the pack with TOP and ⟹ on top, if present.

Follow g. through h. of section 3.1 for routing the tape through the punch.

## 3.3 TEARING OFF TAPE

To tear off (or cut off) punched tape, it may be desirable to push the FEED control button to allow some additional tape at the end of the punched message. Holding the tape firmly, pull the tape quickly upward and slightly toward the back of the machine. The cutting blade will then sever the tape easily. Do not attempt to tear off the tape by pulling it to one side or the other. The cutting blade can not work most efficiently when used in this manner.

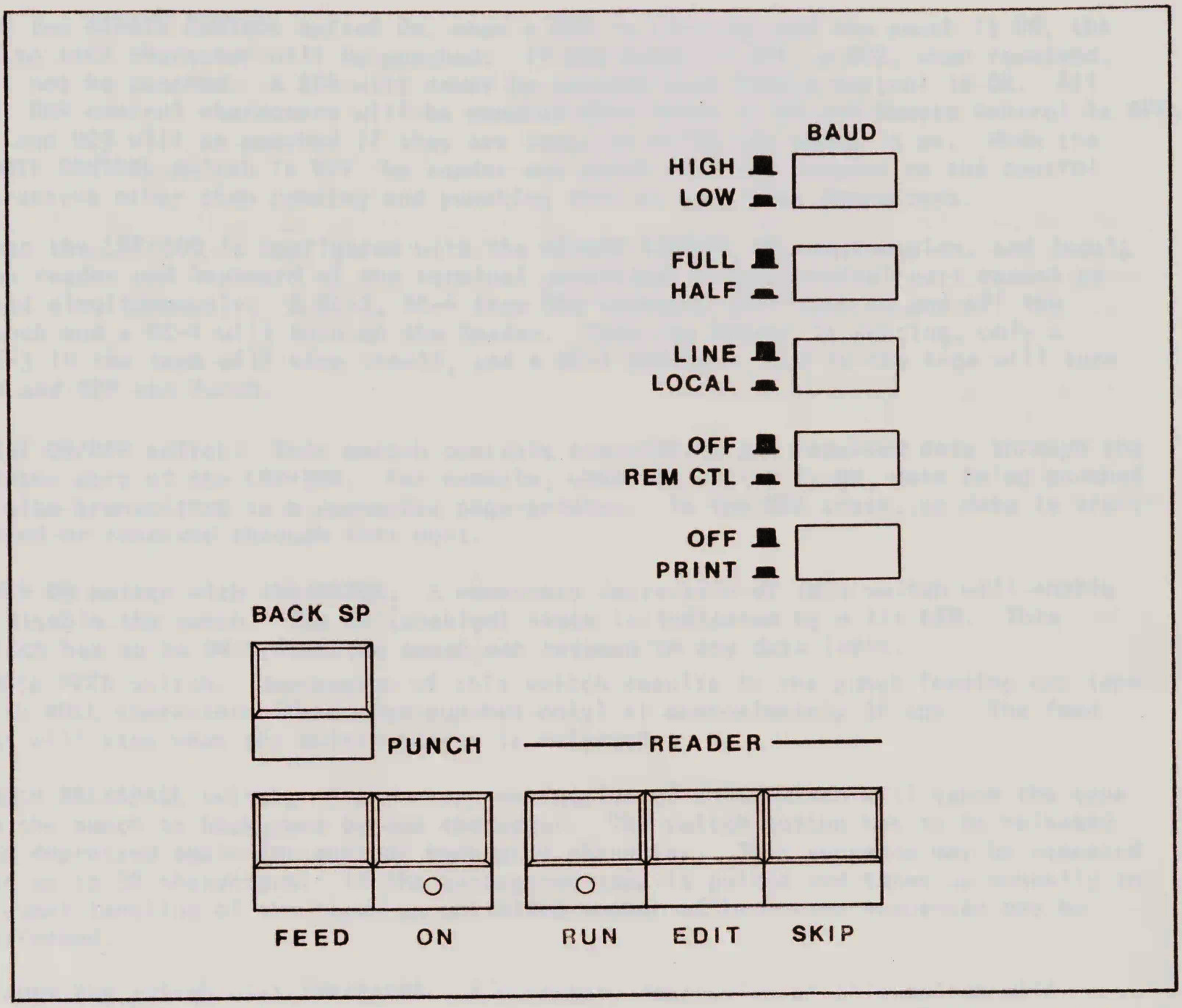
## 3.4 CONTROLS AND INDICATORS

Figure 3-2 illustrates the controls and indicators on the LRP-300, except the power switch which is located on the rear side of the unit.

POWER ON/OFF switch. This switch controls the AC power to the unit. When the unit is first powered up, the PUNCH ON switch will automatically come up in the ON state (LED on), the READER RUN switch will come up in the OFF state (LED off).

LOW/HIGH BAUD switch. The rate at which characters are transmitted and received by the reader and punch is controlled by this switch. LOW - 110 Baud (10 char/sec), HIGH - 300 Baud (30 char/sec). 110 and 300 baud are the standard settings of the LRP-300. Check programming label on rear of unit for other baud rate settings.

FULL/HALF DUPLEX switch. In half duplex operation, only the data transmitted by the reader may simultaneously be received by the punch. In full duplex the punch and reader may receive and transmit different data simultaneously and independently from each other.




CONTROLS AND INDICATORS

FIGURE 3-2

If the LRP-300 is programmed for ECHOPLEX in lieu of FULL DUPLEX, the received data will be transmitted (echoed) back to the modem.

LINE/LOCAL switch. When this switch is in the LINE position, data may be transmitted and received through the modem port of the LRP-300. In the LOCAL mode the receive/transmit lines of the modem port are disabled and only local operation can be performed.

REMOTE CONTROL switch. When this switch is ON the unit may be controlled from a remote terminal operating in full duplex with the LRP-300. The reader and punch will turn on and off in response to the following control codes:

| Function | ASCII Code |
|---|---|
| Reader Start | DC1 |
| Punch Start | DC2 |
| Reader Stop | DC3 |
| Punch Stop | DC4 |

With the REMOTE CONTROL switch ON, when a DC2 is received and the punch is ON, the DC2 co trol character will be punched. If the punch is OFF, a DC2, when received, will not be punched. A DC4 will never be punched when Remote Control is ON. All DC2, DC4 control characters will be punched when Punch is ON and Remote Control is OFF. DC1 and DC3 will be punched if they are received while the punch is on. When the REMOTE CONTROL switch is OFF the reader and punch will not respond to the control characters other than reading and punching them as any other characters.

When the LRP-300 is configured with the REMOTE CONTROL ON, half-duplex, and local; the reader and keyboard of the terminal connected to the terminal port cannot be used simultaneously. A DC-2, DC-4 from the keyboard will turn on and off the Punch and a DC-1 will turn on the Reader. Once the Reader is running, only a DC-3 in the tape will stop itself, and a DC-2 and DC-4 read in the tape will turn ON and OFF the Punch.

PRINT ON/OFF switch. This switch controls transmitted and received data through the printer port of the LRP-300. For example, when the switch is ON, data being punched is also transmitted to a connected page-printer. In the OFF state, no data is transmitted or received through this port.

PUNCH ON switch with INDICATOR. A momentary depression of this switch will enable or disable the punch. The ON (enabled) state is indicated by a lit LED. This switch has to be ON before the punch can respond to any data input.

PUNCH FEED switch. Depression of this switch results in the punch feeding out tape with NULL characters (feedholes punched only) at approximately 34 cps. The feed out will stop when the switch button is released.

PUNCH BACKSPACE switch. A momentary depression of this switch will cause the tape in the punch to backspace by one character. The switch button has to be released and depressed again for another backspace character. This sequence may be repeated for up to 50 characters. If the backspaced tape is guided and taken up manually to prevent tangling of the tape, an unlimited number of backspace sequences may be performed.

READER RUN switch with INDICATOR. A momentary depression of this switch will cause the reader to start reading tape at the selected baud rate. The ON state is indicated by a lit LED. A second momentary depression will cause the reader to stop (LED off).

READER EDIT switch. This is a very powerful control switch which has three functions: First, a short momentary depression of less than 1/2 second duration will cause the reader to advance one step, i.e. read one character. Second, holding the switch button depressed will cause the reader to search until a Carriage Return character is detected; the reader will then stop. To restart, the switch button has to be released and depressed again. Third, the release of the button prior to detection of a Carriage Return character will stop the reader also.

READER SKIP switch. This momentary switch has the same three functions as the EDIT switch except no data is transmitted from the reader. In other words, its effect is only mechanical motion of the tape through the read head.

CARRIAGE RETURN DELAY. This control, located on the rear side of the unit (see fig. 2.2), should be disregarded if the LRP-300 is connected to a printer with data buffer, a DECWRITER for example. With printers without data buffer, this automatic time delay following a carriage return eliminates the need for fill characters. It is

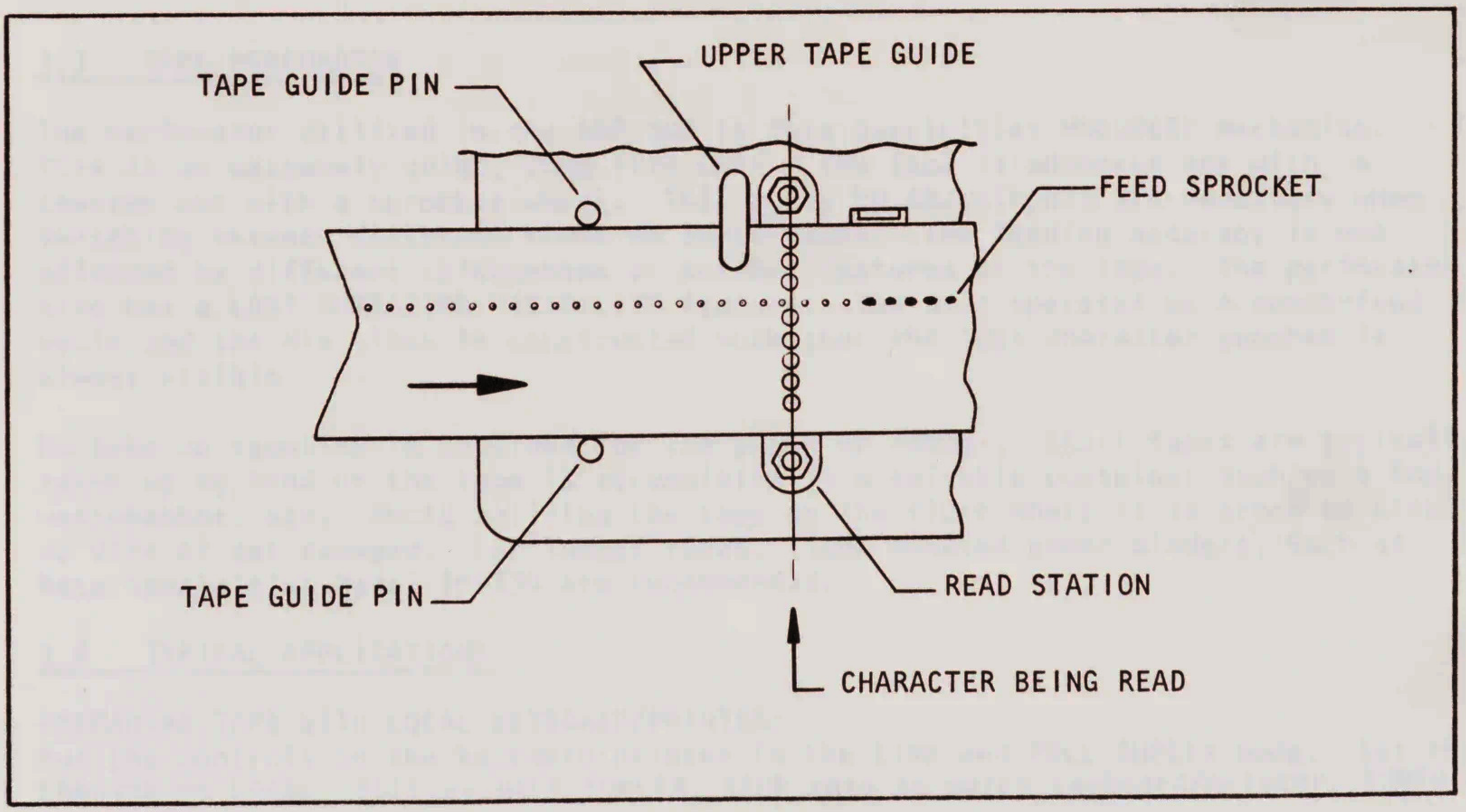
adjustable from 10 ms to 1 second. See section 2.5 for a detailed description of setting this control. When duplicating tapes in the LOCAL mode with the PRINT Control off, the delay is automatically set to zero, thereby improving thru-put.

## 3.5 TAPE READER

The LRP-300 utilizes an optical tape reader with a sprocket drive which moves the tape from left to right. To LOAD TAPE in the reader: raise the lid to expose the read station, slide the tape under the upper tape guide and between the tape guide pins (see figure 3-3), engage the feedholes with the drive sprocket and lower the lid carefully. The tape is now ready to be read.

When making tapes, it is advisable to precede any data with enough leader tape so no character alignment is necessary when loading tape in the reader. The reader operates in the READ-FEED mode. A character is first read and then the tape is advanced until the next character is in alignment with the read station. If it is necessary to read a particular character, align the character to be read with the read station when loading the tape.

It is advisable to use only good quality tapes. See section 4.1 for recommended materials. Transparent spots, uneven density and width out of tolerance, typically associated with substandard tapes, may cause reader errors.

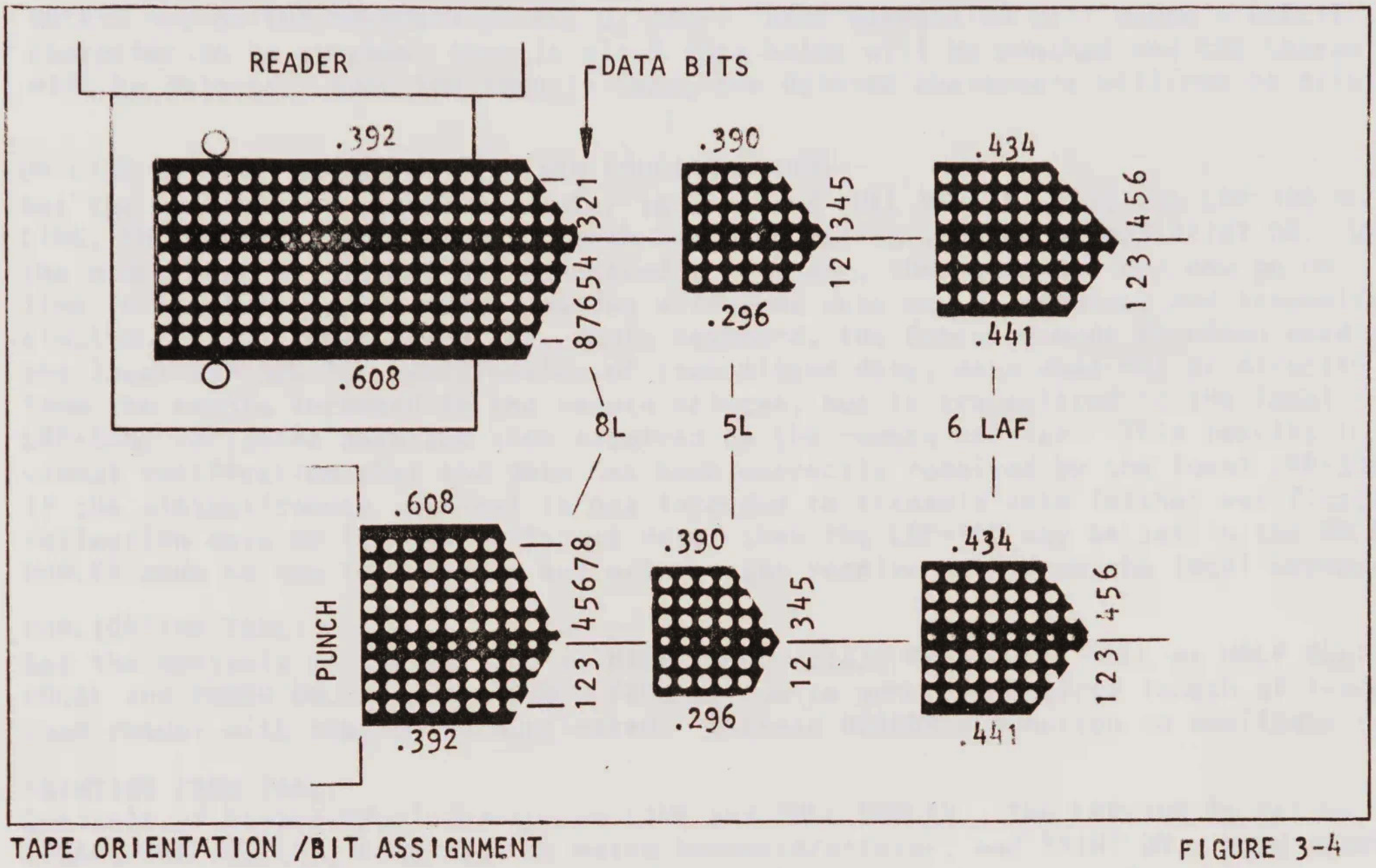



READER

FIGURE 3-3

## 3.6 TAPE ORIENTATION/BIT ASSIGNMENT

Figure 3-4 illustrates orientation of the tape in the punch and reader for 8 and 5 channel tape.




TAPE ORIENTATION /BIT ASSIGNMENT FIGURE 3-4

## 3.7 TAPE PERFORATOR

The perforator utilized in the LRP-300 is Data Specialties MODUPERF mechanism. This is an extremely quiet, long life unit. The tape is advanced not with a capstan but with a sprocket wheel. This means NO ADJUSTMENTS are necessary when switching between different kinds of paper tapes. The feeding accuracy is not affected by different thicknesses or surface textures of the tape. The perforator also has a LAST CHARACTER VISIBILITY feature. The unit operates on a punch-feed cycle and the die block is constructed such that the last character punched is always visible.

No take up spooling is provided for the punch or reader. Short tapes are typically taken up by hand or the tape is accumulated in a suitable container such as a box, wastebasket, etc. Avoid spilling the tape on the floor where it is prone to pick up dirt or get damaged. For longer tapes, floor mounted power winders, such as Data Specialties Model TM-230 are recommended.

## 3.8 TYPICAL APPLICATIONS

PREPARING TAPE WITH LOCAL KEYBOARD/PRINTER:
Put the controls on the keyboard/printer in the LINE and FULL DUPLEX mode. Set the LRP-300 on LOCAL, FULL or HALF DUPLEX, BAUD rate to match keyboard/printer, PUNCH ON, and PRINT ON.

If a typing error occurs, the tape can be corrected in the following manner. Depress the BACKSPACE button on the LRP-300. Each depression will cause the tape to step one character backwards. If one character has to be corrected, backspace once; if five characters have to be corrected, backspace five times. Now depress the DELETE key on the keyboard of the printer. Each depression will cause a DELETE character to be punched; that is all 8 data holes will be punched and the character will be deleted. When the tape is read, the deleted characters will not be printed.

ON LINE WITH KEYBOARD PRINTER (ASR CONFIGURATION):
Set the controls of keyboard/printer to LINE and FULL DUPLEX. Set the LRP-300 on LINE, FULL DUPLEX, BAUD rate to match keyboard printer, PUNCH ON and PRINT ON. With the modem port of the LRP-300 connected to a modem, the equipment can now go on line in the full duplex mode, meaning different data may be received and transmitted simultaneously. When using the remote keyboard, the Echoplex mode is often used on the local LRP-300 for verification of transmitted data; data does not go directly from the remote keyboard to the remote printer, but is transmitted to the local LRP-300, reflected back and then received by the remote printer. This results in visual verification that the data has been correctly received by the local LRP-300. If the distant/remote terminal is not intended to transmit data (either verification reflection data or its own different data) then the LRP-300 may be set in the HALF DUPLEX mode so the local punch and printer can receive data from the local keyboard.

DUPLICATING TAPE:
Set the controls on the LRP-300 to HIGH (baud rate), PRINT OFF, FULL or HALF duplex, LOCAL and PUNCH ON. Depress PUNCH FEED button to generate desired length of leader. Load reader with tape to be duplicated. Depress READER RUN button to duplicate tape.

PRINTING FROM TAPE:
Controls of keyboard/printer are on LINE and FULL DUPLEX. The LRP-300 is set on LOCAL, HALF DUPLEX, BAUD rate to match keyboard/printer, and PRINT ON. Load reader with tape to be printed. Depress READER RUN button to print data from tape.

TAPE EDITING - DELETION OF CHARACTER:
To edit tapes the LRP-300 is connected to a keyboard/printer or keyboard/CTR terminal. Controls on this terminal are set to LINE and FULL DUPLEX. The LRP-300 is in LOCAL, FULL or HALF DUPLEX, BAUD rate to match terminal, PUNCH ON, and PRINT ON. Load the reader with the tape to be edited. Use the READER RUN and/or EDIT control to read (print and duplicate) the tape. Stop the reading of the tape just before the character to be deleted. Depress the SKIP button to skip over the character (will not be punched). Duplicate rest of tape by depressing the READER RUN button.

TAPE EDITING - ADDITION OF CHARACTER:
Set the controls as above. Load the reader with the tape to be edited. Use the READER RUN and EDIT control to read (print and duplicate) the tape until the spot where a new character should be added. Add the new character or characters via the keyboard. Duplicate the rest of the tape by depressing the READER RUN button.

TAPE EDITING - CHANGING OF CHARACTER:
This is a combination of deletion and addition of characters as described above.

TRANSMITTING/RECEIVING - DISTANT TERMINAL:
The LRP-300 is put in the LINE mode. FULL/HALF DUPLEX and HIGH/LOW baud rate are set as required. After going through the required hook-up sequence, the LRP-300 is ready to transmit and/or receive data by actuating the appropriate controls.

## 3.9 OPERATOR CARE

GENERAL - Do not use the cover to hold pencils, papers, paper clips, etc.
- Use only a lint free cloth to clean the LRP-300. Do not use solvents or harsh cleaning agents. If excessively dirty, a mild detergent solution or desktop cleaner may be used sparingly.

PUNCH - As required, clean die block area with a soft bristle brush.

READER - As required, remove any dirt/lint accumulations in the read station area and the LED's (underside of lid) with a soft bristle brush.

# 4. APPENDIX

## 4.1 RECOMMENDED TAPE MATERIALS

PAPER TAPE. Unoiled colored or buff tape with a 55% Maximum Transmissivity is recommended. Black tape should be avoided since sometimes carbon dye is used which is very detrimental to the wear characteristics of the punch pins. The tape should be from a quality manufacturer and meet EIA Standard RS-227-A.

CAUTION: Oiled buff tape is not recommended. The 5 to 12% oil in these tapes sometimes causes highly transparent spots to occur. These spots, combined with the light yellow "buff" color, may exceed 55% light transmissivity and cause reader errors. While oiled tapes of grey and darker colors are acceptable since their transmissivity is well below 55%, the oil in the tape is of no value since it has an insignificant effect on the life expectancy of the MODUPERF punch head.

MYLAR TAPE. Metalized Mylar, Mylar/Foil/Mylar, or Paper/Mylar/Paper tapes may be used. They may range in thickness from .0025 in. to .0040 in. There again, it is recommended that the tape should be from a quality manufacturer.

LIFE EXPECTANCY OF PUNCH HEAD:

| | |
|---|---|
| Paper Tape; any color but black | 2,000,000 feet of tape (240 million char.) |
| Paper Tape; black color | 500,000 feet of tape ( 60 million char.) |
| Mylar Tape | 500,000 feet of tape ( 60 million char.) |

Both PAPER and MYLAR tapes, if of poor quality, will cause problems in punching and/or reading. For example, the tape might have the following defects: transparent spots, width out of tolerance, splices in roll or roll not continuous, torn folds (fanfolds), tape delamination (mylars), etc. Data Specialties has tested the tapes of the suppliers listed below and found them to be acceptable. This list is not meant to be exclusive.

P, M Arvey Corporation
3500 N. Kimball Ave.
Chicago, Il. 60618
(312) 463-1400

P,M Chase Foster
199 Amaral St.
East Providence, R.I. 02914
(401) 434-2340

P Eastern Specialties
P.O.Box 350
Holyoke, Mass. 01040
(413) 533-7103

P, M Numeridex, Inc
241 Holbrook Drive
Wheeling, Il. 60090
(312) 541-8840

P Occidental
1188 Montague View
San Leandro, Ca 94577
(415) 352-3202

P Paper Manufactures Company
9800 Bustleton Ave.
Philadelphia, Pa. 19115
(215) 673-4500

P RIBCO
200 Railroad Ave.
Paterson, N.J. 07509
(201) 271-4848

P - Paper Tapes
M - Mylar Tapes

## 4.2 TAPE SPACING STANDARDS/ADJUSTMENTS

The intent of this section is to clarify tape spacing specifications, tape spacing measurements, and (if required) how to adjust tape spacing to meet the requirement of a particular non DSI reader.

Each DSI system produces tapes which meet the following US and international standards:

EIA RS-227-A
ISO 1154
ANSI X3.18
— 8 Level Tape
ANSI X3.19 (5 Level Tape)

All of these specifications are the same in regards to tape spacing. They state:

> "Longitudinal error between centers of feed holes may accumulate up to plus or minus .025 inch, within any span of 50 spaces (5.0 inches)." This is commonly called the 5 INCH SPACING.

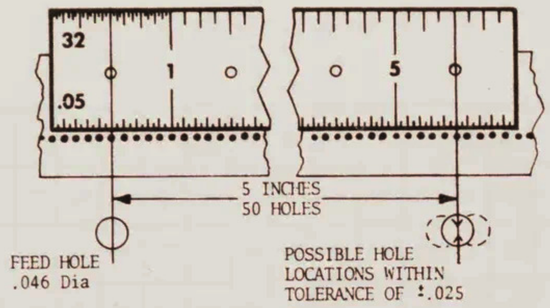
While these specifications were written in the age of the mechanical tape readers, they still serve as a valuable guide to present day punch manufacturers. Today's optical readers can accurately read tape with much greater variations than is specified above.

To measure the 5 inch spacing, perforate a length of tape with a typical code arrangement. Then use DSI's Tape Spacing Kit, P/N 8771, or any accurate scale with .1 inch gradations and follow the instructions on Figure 4-2.

To adjust the 5 inch spacing, remove the cover of the unit to gain access to the stepper motor which drives the tape sprocket wheel. This stepper motor is located just below the tear edge of the tape exit on the punch. Then follow instructions in Figure 4-2.

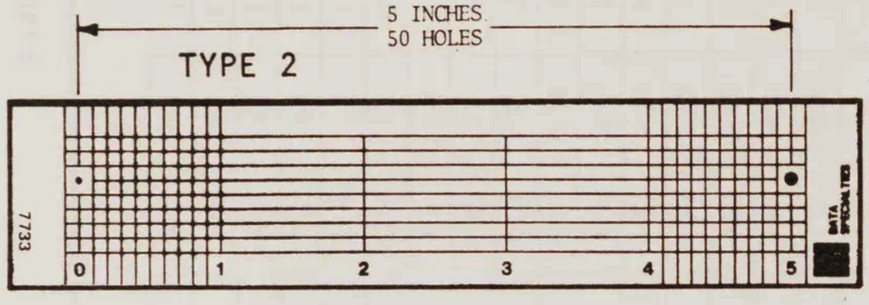
# check

TYPE 1




Center a feed hole on a .100 inch graduation at one end of the gauge. See figure. Feed holes must be centered in line with the graduations for a minimum of 5 inches and meet spacing requirements.

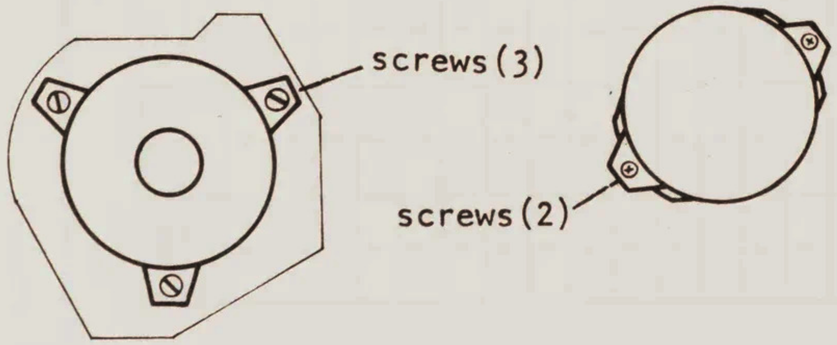
TYPE 2




Center a feed hole directly over the small black dot on the left side of the gauge. The feed holes must be centered in line with the graduations for a minimum of 5 inches. When the 50th feed hole is positioned over the larger black dot only black shoud be seen. If any silver shows, the hole spacing is out of tolerance. See figure.

# adjust

STEPPER MOTOR
**You will see one of these two types on your unit.**




Loosen stepper motor mounting screws just enough so stepper motor can be rotated manually.
Rotate clockwise for longer spacing.
Rotate counterclockwise for shorter spacing.
Tighten screws and re-check spacing.

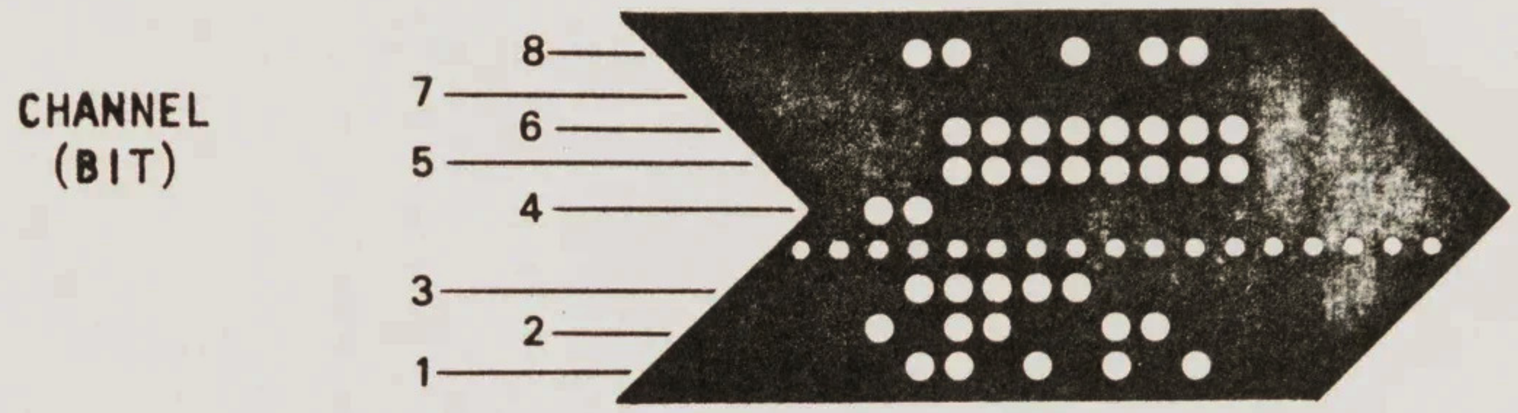
**CAUTION: Stepper Motor may be HOT**

TAPE SPACING CHECK/ADJUST

FIGURE 4-2

## 4.3 ASCII CODE CHART AND TAPE SAMPLE

The sample tape is shown with leader (null) preceding and following the data. The point of the tape indicates direction of tape motion. Bit No. 8, while not defined by the ASCII Code, is used for even or odd parity or other checking schemes. The sample illustrates even parity. (see fig. 4-3)




**ASCII**

UNITED STATES OF AMERICA
**STANDARD CODE**
FOR INFORMATION INTERCHANGE
(X3.4-1967)

| $b_7$ → | | | | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $b_6$ → | | | | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 |
| $b_5$ → | | | | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 |
| Bits | $b_4$ | $b_3$ | $b_2$ | $b_1$ | COLUMN → / ROW ↓ | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| | 0 | 0 | 0 | 0 | 0 | NUL | DLE | SP | 0 | @ | P | ` | p |
| | 0 | 0 | 0 | 1 | 1 | SOH | DC1 | ! | 1 | A | Q | a | q |
| | 0 | 0 | 1 | 0 | 2 | STX | DC2 | " | 2 | B | R | b | r |
| | 0 | 0 | 1 | 1 | 3 | ETX | DC3 | # | 3 | C | S | c | s |
| | 0 | 1 | 0 | 0 | 4 | EOT | DC4 | $ | 4 | D | T | d | t |
| | 0 | 1 | 0 | 1 | 5 | ENQ | NAK | % | 5 | E | U | e | u |
| | 0 | 1 | 1 | 0 | 6 | ACK | SYN | & | 6 | F | V | f | v |
| | 0 | 1 | 1 | 1 | 7 | BEL | ETB | ' | 7 | G | W | g | w |
| | 1 | 0 | 0 | 0 | 8 | BS | CAN | ( | 8 | H | X | h | x |
| | 1 | 0 | 0 | 1 | 9 | HT | EM | ) | 9 | I | Y | i | y |
| | 1 | 0 | 1 | 0 | 10 | LF | SUB | * | : | J | Z | j | z |
| | 1 | 0 | 1 | 1 | 11 | VT | ESC | + | ; | K | [ | k | { |
| | 1 | 1 | 0 | 0 | 12 | FF | FS | , | < | L | \ | l | ¦ |
| | 1 | 1 | 0 | 1 | 13 | CR | GS | - | = | M | ] | m | } |
| | 1 | 1 | 1 | 0 | 14 | SO | RS | . | > | N | ^ | n | ~ |
| | 1 | 1 | 1 | 1 | 15 | SI | US | / | ? | O | _ | o | DEL |

ASCII CODE CHART AND TAPE SAMPLE

Figure 4-3

2008/1/2